

CLAIMS

1. A glucose sensor comprising an electrode including a
conductive component and glucose dehydrogenase immobilized to
5 the conductive component;

wherein the glucose dehydrogenase is a protein complex
including a catalytic activity subunit in which flavin adenine
dinucleotide is bound as coenzyme and which has glucose
dehydrogenase activity, and an electron mediator subunit for
10 supplying an electron donated from the catalytic activity
subunit to the conductive component.

2. The glucose sensor according to claim 1, wherein the glucose
dehydrogenase derives from a microorganism belonging to the
15 genus Burkholderia.

3. The glucose sensor according to claim 2, wherein the electron
mediator subunit is cytochrome c.

20 4. The glucose sensor according to claim 3, wherein molecular
weight of the catalytic activity subunit in SDS-polyacrylamide
gel electrophoresis under reduction conditions is about 60 kDa,
whereas molecular weight of the cytochrome c in
SDS-polyacrylamide gel electrophoresis under reduction
25 conditions is about 43 kDa.

5. The glucose sensor according to claim 4, wherein the glucose dehydrogenase further includes a γ subunit whose molecular weight in SDS-polyacrylamide gel electrophoresis under reduction conditions is about 14 kDa.

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6. The glucose sensor according to claim 1, wherein the glucose sensor is designed to continuously measure a glucose level or successively measure a glucose level a plurality of times.

10 7. The glucose sensor according to claim 6, further comprising a sampler for sampling blood or interstitial fluid from subcutaneous tissue;

wherein the blood or interstitial fluid sampled by the sampler is brought into contact with the electrode.

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8. The glucose sensor according to claim 7, wherein the sampler comprises a hollow lancing needle for lancing skin and a liquid reservoir for reserving the blood or interstitial fluid sampled through the lancing needle; and

20 wherein the blood or interstitial fluid reserved in the liquid reservoir is brought into contact with the electrode.

9. The glucose sensor according to claim 8, wherein the liquid reservoir comprises a porous body arranged in contact with the
25 electrode and the lancing needle.

10. The glucose sensor according to claim 6, wherein the glucose sensor is used with at least part of the electrode embedded in subcutaneous tissue.

5 11. The glucose sensor according to claim 10, wherein the electrode is provided on a flexible insulating substrate.

12. A glucose level measuring apparatus designed to continuously measure a glucose level or successively measure a glucose level
10 a plurality of times based on blood or interstitial fluid sampled from subcutaneous tissue, the apparatus comprising:

a glucose sensor including an electrode which includes a conductive component and glucose dehydrogenase immobilized to the conductive component;

15 a measurer for measuring response quantity related to amount of electron transfer between the blood or interstitial fluid and the electrode;

a computation unit for computing a glucose level based on the measurement by the measurer; and

20 a controller for controlling timing at which the glucose level is computed at the computation unit;

wherein the glucose dehydrogenase is a protein complex including a catalytic activity subunit in which flavin adenine dinucleotide is bound as coenzyme and which has glucose
25 dehydrogenase activity, and an electron mediator subunit for supplying an electron donated from the catalytic activity subunit to the conductive component.

13. The glucose level measuring apparatus according to claim 12, wherein the glucose dehydrogenase derives from a microorganism belonging to the genus Burkholderia.

5 14. The glucose level measuring apparatus according to claim 13, wherein the electron mediator subunit is cytochrome c.

15. The glucose level measuring apparatus according to claim 14, wherein molecular weight of the catalytic activity subunit
10 in SDS-polyacrylamide gel electrophoresis under reduction conditions is about 60 kDa, whereas molecular weight of the cytochrome c in SDS-polyacrylamide gel electrophoresis under reduction conditions is about 43 kDa.

15 16. The glucose level measuring apparatus according to claim 12, further comprising a sampler for sampling blood or interstitial fluid from subcutaneous tissue;

wherein the blood or interstitial fluid sampled by the sampler is brought into contact with the electrode.

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17. The glucose level measuring apparatus according to claim 16, wherein the sampler comprises a hollow lancing needle for lancing skin and a liquid reservoir for reserving the blood or interstitial fluid sampled through the lancing needle; and

25 wherein the blood or interstitial fluid reserved in the liquid reservoir is brought into contact with the electrode.

18. The glucose level measuring apparatus according to claim 17, wherein the liquid reservoir comprises a porous body arranged in contact with the electrode and the lancing needle.

5 19. The glucose level measuring apparatus according to claim 12, wherein the apparatus is used with at least part of the electrode embedded in subcutaneous tissue.

20. The glucose level measuring apparatus according to claim 10 19, wherein the electrode is provided on a flexible insulating substrate.